



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/559,749

01/19/2006

Ingrid Bach

09931-00051-US

5947

23416

7590

01/23/2009

CONNOLLY BOVE LODGE & HUTZ, LLP

P O BOX 2207

WILMINGTON, DE 19899

EXAMINER

KOSACK, JOSEPH R

ART UNIT

PAPER NUMBER

1626

MAIL DATE

DELIVERY MODE

01/23/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/559,749	<b>Applicant(s)</b> BACH ET AL.	
	<b>Examiner</b> Joseph R. Kosack	<b>Art Unit</b> 1626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Claims 3-16 are pending in the instant application.

#### ***Amendments***

The amendments filed on October 29, 2008 and November 4, 2008 have been acknowledged and has been entered into the application file.

#### ***Previously Claim Rejections - 35 USC § 112***

Claims 1-16 were previously rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Applicant has traversed the rejection on the grounds that the structures in base claim 3 relate to the same general ligand system and that the compounds would have a similar chemical reactivity and can all be synthesized by the method of claim 3.

The Examiner respectfully disagrees. The ligand systems are *not* all similar. The groups of formulae 7-9 are drawn to cyclic groups, which include saturated systems, unsaturated systems, and aromatic systems. These disparate systems will have different activities for the reaction specified in the claims. Additionally, even with the field of metals limited to transition metals, transition metals have very different reactivities depending on the d-electron count and available oxidation states of the metal. The Applicant has only shown the reaction to work with 1 of 30 transition metals.

The rejection is maintained, except for cancelled claims 1 and 2.

Claims 1-16 were previously rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for reactions involving 2-phenylpyridine

Art Unit: 1626

and iridium, does not reasonably provide enablement for any other ligand/metal combination.

Applicant has traversed the rejection on the same grounds as above, and the Examiner disagrees for the same reasons as stated above. The rejection is maintained, except for cancelled claims 1 and 2.

***Previous Claim Rejections - 35 USC § 102***

Claims 1-8 and 10-14 were previously rejected under 35 U.S.C. 102(b) as anticipated by Konno et al. (*Chemistry Letters*, 2003, 252-253, Released February 12, 2003).

Applicant has traversed the rejection on the grounds that the prior art does not teach the reaction being heated to 100 to 210° C.

The Examiner is not persuaded. The claims do not exclude the heating step to happen during the microwaving of the reaction mixture. Additionally, some of the reactions are in the microwave for 30 minutes, long enough for the reaction to get between 100 to 210° C. A normal household microwave can boil water in 3-5 minutes, and water boils at 100° C. Therefore, the Examiner still believes that Konno et al. inherently teach the process of the instant claims.

The rejection is maintained, except for cancelled claims 1 and 2.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In the instant case, a process for forming carbon-metal bonds by ortho-metalation is claimed using one or more organic compounds with a C-H bond and at least one metal. The specification only details one example using 2-phenylpyridine and Na[IrCl<sub>2</sub>(acac)<sub>2</sub>]. While working examples are not required, they can be extremely helpful in the chemical arts where an extremely broad genus is claimed. It is well known in the art that a process that works for one metal and one ligand system may not work for another metal or another ligand system. Therefore, a person of skill in the art would expect to see a number of examples covering the vast scope claimed in order to conclude that the Applicant was in possession of the claimed invention at the time of filing. Hence, the claims do not meet the written description provision of 35 U.S.C. 112, first paragraph.

Claims 3-16 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for reactions involving 2-phenylpyridine and iridium, does not reasonably provide enablement for any other ligand/metal combination. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims.

The nature of the invention is a process for forming carbon-metal bonds by ortho-metalation is claimed using one or more organic compounds with a C-H bond and at least one metal. The organic compound can be any compound with a C-H bond and the metal can be any metal. The state of the inorganic chemistry art is that a process that works for one metal and one ligand system may not work for another metal or another ligand system. The only example that is provided is that of a reaction involving 2-phenylpyridine and Na[IrCl<sub>2</sub>(acac)<sub>2</sub>]. Therefore, in view of the evidence found, one of skill in the art would require undue experimentation in order to practice the invention to the full scope claimed.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 3-8 and 10-14 are rejected under 35 U.S.C. 102(b) as anticipated by Konno et al. (*Chemistry Letters*, 2003, 252-253, Released February 12, 2003).

Konno et al. teach a process for forming tris-ortho-metalated iridium III complexes using microwave radiation of 2450 Mhz from IrCl<sub>3</sub> hydrates and 2-phenylpyridine in a ratio of 1:100. See Scheme 1, page 252 and Table 2, page 253.

While Konno et al. do not teach the wattage of the microwave or the temperature of the reaction mixture, one of skill in the art would determine that the Konno process meets the wattage (1 to 10,000 watts per liter) and temperature requirements (over 40°

Art Unit: 1626

C) as most microwave ovens range between 1 and 10,000 watts and microwaves force the molecules in the reaction mixture to vibrate faster and faster, leading to a rise in temperature above room temperature (25° C.) Therefore, Konno inherently anticipates the claims.

### ***Conclusion***

Claims 3-16 are rejected.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph R. Kosack whose telephone number is (571)272-5575. The examiner can normally be reached on M-Th 6:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph McKane can be reached on (571)-272-0699. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1626

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Joseph R Kosack/  
Examiner, Art Unit 1626

/REI-TSANG SHIAO /  
Primary Examiner, Art Unit 1626